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REMARKS

This is a full and timely response to the non-final Official Action mailed March 18, 2005. Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

By the forgoing amendment, the specification and various claims have been amended. Additionally, original claims 37-49 have been cancelled, and new claims 50-64 have been added. Thus, claims 1-36 and 50-64 are currently pending for further action.

Prior Art:

The sole issue raised in the outstanding Office Action is a rejection of all the original claims, claims 1-49, as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,376,148 to Liu et al. ("Liu"). For at least the following reasons, this rejection is respectfully traversed.

Claim 1 recites:

A method for creating a three-dimensional solid freeform fabrication object with non-reactive powder comprising:
spreading a non-reactive powder on a substrate;
selectively dispensing a reactive resin directly onto said non-reactive powder, forming a mixture of reactive resin and non-reactive powder, wherein said mixture defines said three-dimensional object; and
curing said reactive resin thereby encapsulating said non-reactive powder.
(emphasis added).

In contrast, Liu does not teach or suggest that a reactive resin is selectively dispensed directly onto a non-reactive powder. Rather, Liu teaches a system in which a charge image is created based on a cross-section of the object to be fabricated. (Liu, Fig. 3, step A). The image is then developed with binder powder (step B). The binder powder, in the form of the cross-section of the object being fabricated, is then transferred to a layer of body-building

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powder (step C). Consequently, Liu does not teach or suggest dispensing reactive resin directly onto a non-reactive powder as claimed.

"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. Therefore, because Liu fails to teach or suggest the subject matter of claim 1, the rejection based on Liu of claim 1 and its dependent claims should be reconsidered and withdrawn.

Moreover, along these same lines, Liu does not teach or suggest the subject matter of claim 27, for example, which recites that the "dispensing system comprises an inkjet dispenser."

Similarly, new claim 62 recites

A system for fabricating a three-dimensional solid freeform fabrication object with non-reactive powder comprising:
a system for spreading a non-reactive powder on a substrate;
an inkjet dispenser for selectively dispensing a reactive resin onto said non-reactive powder, forming a mixture of reactive resin and non-reactive powder, wherein said mixture defines said three-dimensional object; and
a curing system for curing said reactive resin thereby encapsulating said non-reactive powder.

In contrast, Liu teaches away from such a system, expressly stating that the Liu system is "in sharp contrast to operating an inkjet printhead to print adhesive onto a layer of powder in a point-by-point fashion." (Col. 6, line 67 to col. 7, line 3). A reference must be considered for all it teaches, including statements that teach away from the invention as well as disclosures that point toward the invention. *Ashland Oil, Inc. v. Delta Resins &*

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Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985). For at least this reason, the rejection of claim 27 based on Liu should be reconsidered and withdrawn.

Claim 2 recites:

A method for creating a three-dimensional solid freeform fabrication object with non-reactive powder comprising:
spreading a non-reactive powder on a substrate;
heating a reactive resin to a temperature of about 40 to 200 degrees Celsius

(C):

selectively dispensing said heated reactive resin onto said non-reactive powder, forming a mixture of reactive resin and non-reactive powder, wherein said mixture defines said three-dimensional object; and
curing said reactive resin thereby encapsulating said non-reactive powder.

(emphasis added).

In contrast, Liu teaches heating a reactive resin after it has been applied to a body-building material so as to cure that resin. Liu does not, however, teach or suggest heating the resin prior to selectively dispensing the resin as claimed in claim 2.

Again, "[a] claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. Therefore, the rejection based on Liu of claim 2 should be reconsidered and withdrawn.

Claim 3 recites:

A method for creating a three-dimensional solid freeform fabrication object with non-reactive powder comprising:
spreading a non-reactive powder on a substrate;
selectively dispensing a reactive resin onto said non-reactive powder, forming a mixture of reactive resin and non-reactive powder, wherein said mixture defines said three-dimensional object;
applying ultrasonic energy to said mixture of reactive resin and non-reactive powder; and

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curing said reactive resin thereby encapsulating said non-reactive powder.
(emphasis added).

In contrast, Liu does not teach or suggest applying ultrasonic energy to a mixture of reactive resin and non-reactive powder as claimed. The Office Action fails to indicate how or where Liu teaches or suggests such subject matter. For at least this reason, the rejection of claim 3 based on Liu, should be reconsidered and withdrawn.

Claim 24 recites:

24. (currently amended) A solid freeform fabrication system for producing a three-dimensional object using non-reactive powder comprising:
a powder spreading system configured to spread a specified quantity of non-reactive powder;
a dispensing system adapted to selectively dispense both components of a two-part reactive resin onto said non-reactive powder; and
a computing device coupled to and configured to control said dispensing system and said curing system.
(emphasis added).

In contrast, Liu does not teach or suggest selectively dispensing *both* components of a two-part reactive resin onto a non-reactive powder. Rather, Liu merely teaches that "one or more compositions may be included as secondary ingredients in the primary body-building powder material to be dispensed one layer at a time by a powder feeder." (Col. 8, lines 3-8). Thus, any "secondary ingredient" of the binder that may exist, is taught by Liu as being mixed with and throughout the body-building powder. Thus, Liu fails to teach or suggest the more efficient system Applicant has claimed in which both components of the two-part reactive resin are *selectively* dispensed onto the non-reactive powder. For at least this reason, the rejection of claim 24 and its dependent claims based on Liu should be reconsidered and withdrawn.

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Claim 30 recites:

A solid freeform fabrication system for producing a three-dimensional object using non-reactive powder comprising:

spreading means for spreading successive layers of said non-reactive powder;

dispensing means for dispensing a reactive resin onto said non-reactive powder;

curing means for curing said reactive resin, wherein said curing means only partially cures a layer of reactive resin until at least one additional layer of non-reactive powder and selectively-dispensed reactive resin have been formed, said reactive resin then being fully cured so as to promote adhesion between layers of said object; and

controlling means for controlling said spreading means, said dispensing means, and said curing means.

(emphasis added).

In contrast, Liu fails to teach or suggest the claimed curing means that only partially cure a layer of reactive resin until other build layers are in place so as to promote adhesion between layers of the object being fabricated. For at least this reason, the rejection of claim 30 and its dependent claims based on Liu should be reconsidered and withdrawn.

The newly added claims are thought to be patentable over the prior art of record for at least the same reasons given above with respect to the original independent claims.

Therefore, examination and allowance of the newly added claims is respectfully requested.

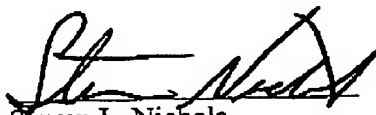
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For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

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